

This listing of claims will replace all prior versions, listings, of claims in the application:

Listing of Claims:

1. (currently amended) An actuator comprising:

an active region having at least one electroactive polymer layer, each polymer layer having anisotropic mechanical properties responsive to an electrical change, ~~and~~ at least two conducting layers arranged wherein a conducting layer is on each side of each polymer layer, and a general purpose layer wherein the general purpose layer includes at least one of oriented insulating fibers in a circumferential direction suspended in a soft matrix and a flexible printed circuit board;

a pair of mechanical connectors at either end of the active region;

a positive connector operably connected to the active region; and

a negative connector operably connected to the active region.

2. (original) An actuator as claimed in claim 1 further including a means for monitoring strain feedback for the active region whereby the actuator acts as a transducer.

3. (original) An actuator as claimed in claim 2 where the electroactive polymer layer is prestretched during fabrication.

4. (original) An actuator as claimed in claim 3 wherein the electroactive polymer layer is one of a single polymer, a copolymer and a composite.
5. (original) An actuator as claimed in claim 3 wherein the electroactive polymer layer has a circumferential direction and an original length and the prestretch of the polymer layer in the circumferential direction is between 50% and 600% of its original length in the circumferential direction.
6. (currently amended) An actuator as claimed in claim 5 wherein the electroactive polymer layer has an axial direction and an original length and the prestretch of the polymer layer in the axial direction is between 0% and 150% of its original length in the ~~circumferential~~ axial direction.
7. (original) An actuator as claimed in claim 3 wherein the thickness of the electroactive polymer layer is between 0.1 μ m-1mm.
8. (original) An actuator as claimed in claim 3 wherein the electroactive polymer layer includes a plurality of adjacent thin layers.
9. (original) An actuator as claimed in claim 8 wherein electroactive polymer includes a thin layer of one of a conducting particulate and a conducting flake and the next adjacent layer is one of a low hardness RTV silicone and low hardness elastomer.

10. (original) An actuator as claimed in claim 2 further including a means for obtaining electrical energy from the transducer responsive to a mechanical load and an electrical load applied thereto whereby the transducer acts as an electrical generator.
11. (original) An actuator as claimed in claim 3 wherein each conducting layer is conducting material chosen from the group consisting of gel, powder, grease, polymer, composite and patterned metal and a combination thereof.
12. (original) An actuator as claimed in claim 3 wherein each conducting layer includes a plurality of layers.
13. (original) An actuator as claimed in claim 12 wherein at least one conducting layer includes a cross-linked elastomeric layer.
14. (original) An actuator as claimed in claim 12 wherein at least one conducting layer includes a patterned layer.
15. (original) An actuator as claimed in claim 12 wherein at least one conducting layer includes at least one distinct patterned region.
16. (original) An actuator as claimed in claim 12 wherein at least one conducting

layer includes a plurality of distinct patterned regions.

17. (original) An actuator as claimed in claim 12 wherein the thickness of each of the plurality of conducting layer ranges from 0.05um to 100nm.

18. (original) An actuator as claimed in claim 3 further including a shielding layer.

19. (original) An actuator as claimed in claim 18 wherein the shielding layer is one of low insulating low durometer elastomer, polydimethylsiloxane microcellular foam, and conducting RTV silicone.

20. (original) An actuator as claimed in claim 18 wherein the shielding layer is polydimethylsiloxane micocellular form having a thickness from 0.1 mm to 1 mm.

21. (cancelled)

22. (currently amended) An actuator as claimed in claim ~~[21]~~ 1 wherein the active region is arranged such that there is a first conducting layer, ~~[a]~~ the first electroactive polymer layer, a second conducting layer, a general purpose layer, a third conducting layer, a second electroactive polymer layer and a fourth conducting layer.

23. (currently amended) An actuator as claimed in claim 22 wherein the general

purpose layer further includes~~[(is)]~~ one of an anisotropy composite material, and a thin stiff polymer.

24. (cancelled)

25. (original) An actuator as claimed in claim 22 wherein the general purpose layer has monitorable electrical properties.

26. (currently amended) An actuator as claimed in claim 22 wherein the general purpose layer~~[(is)]~~ further includes one of a thin stiff polymer ~~and a ceramic~~ composed of one of a polypropylene and mica, and a ceramic.

27. (currently amended) An actuator as claimed in claim 22 wherein the general purpose layer~~[(is)]~~ further includes a thin dielectric media capable of energy storage.

28. (cancelled)

29. (currently amended) An actuator as claimed in claim 18 wherein the mechanical connectors are made of a stiff ~~insulating~~ material.

30. (currently amended) An actuator as claimed in claim 29 wherein the stiff ~~insulating material~~ is an insulating material ~~has a conductive coating~~.

31. (currently amended) An actuator as claimed in claim 29 wherein the stiff insulating material is one of a conductive material and an insulating material which has a conductive coating.

32. (original) An actuator as claimed in claim 3 wherein the transducer is hollow.

33. (original) An actuator as claimed in claim 32 wherein a check valve is positioned in the hollow of the actuator.

34. (original) An actuator as claimed in claim 3 wherein one of the pair of mechanical connectors is integrally attached to the positive connector and the other of the pair of mechanical connectors is integrally attached to the negative connector.

35. (original) An actuator as claimed in claim 18 further including a structural core.

36. (original) An actuator as claimed in claim 35 wherein the structural core includes one of a spring, a tube, a plurality of rings and a plurality of discs.

37. – 52. (cancelled)